Claims

[1] A method of manufacturing an electrode wire with multi-coated layers for electrical discharge machining (EDM), comprising:
manufacturing a core wire as material having a diameter of 2.5mm is drawn to 0.9 to 1.0mm;
coating pure zinc on an outer surface of the core wire with a thickness from 5 to 10m;
drying the coated wire to get rid of moisture therefrom, including:
raising a temperature from a room temperature to 50 ~ 60C by 1 to 2C per a minute in a diffusion-heat treating furnace; and
maintaining the coated wire at the temperature of 50 ~ 60C for 60 to 120 minutes;
diffusion-heat treating the coated wire, thereby forming multi-coated layers on the coated wire, including:
raising the temperature from 50 ~ 60C to 120 ~ 180C by 2 to 3C per a minute;
maintaining the coated wire at the temperature of 120 ~ 180C for 50 ~ 90 minutes;
cooling the coated wire by decreasing the temperature from 120 ~ 180C to 50 ~ 60C by 2 to 3C per a minute;
drawing the coated wire with the multi-coated layers as a finished product to a diameter of 0.1 ~ 0.33mm; and
stabilization treating the multi-coated wire, including:
heating the multi-coated wire to a temperature of 200 ~ 220C in an air atmosphere; and
cooling the heated multi-coated wire at the air atmosphere.

[2] The method according to claim 1, wherein the step of manufacturing the core wire including:
drawing so that a circularity of the core wire is more than 1m; and
annealing heat-treatment so that a tensile strength of the core wire is less than 1/2 hard.

[3] The method according to claim 1, wherein the step of coating pure zinc is to use a particle of which size is less than 2m.

[4] The method according to claim 1, wherein the diffusion-heat treating step is to form a pure zinc layer of CuZn90~CuZn100, which is 5m from an outer surface, and an zinc alloy layer of CuZn80-CuZn95 between the pure layer and the outer surface of the core wire, which is 5m.

[5] The method according to claim 1, wherein the drawing step is use a drawing dies

made of material which is fine particle type artificial diamond and has a press angle of 12~15.

[6] The method according to claim 1, wherein the multi-coated layers is a lower layer formed on the surface of the core wire and an upper layer on the lower layer, wherein a thickness ratio of the upper layer to the lower layer is 20:80 ~30:70.

[7] An electrode wire with multicoated layers for electrical discharge machining (EDM) manufactured by the method according to claim 1, the electrode wire comprising:
a core wire;
a zinc alloy layer formed on the core wire; and
a zinc layer on the alloy zinc layer.